



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231  
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/909,141      | 07/19/2001  | Alice M. Chiang      | 301496.2001-103     | 7813             |

7590 09/25/2002  
THOMAS O. HOOVER, ESQ.  
BOWDITCH & DEWEY, LLP  
161 Worcester Road  
P.O. Box 9320  
Framingham, MA 01701-9320

EXAMINER

PIHULIC, DANIEL T

| ART UNIT | PAPER NUMBER |
|----------|--------------|
|----------|--------------|

3662

DATE MAILED: 09/25/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/909,141

Applicant(s)

CHIANG ET AL.

Examiner

Daniel Pihulic

Art Unit

3662

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 July 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

1. The drawings are objected to because reference numeral **80** has been used for both the sampling box and the demodulation box in Fig.3.

Appropriate correction is required.

2. The use of the trademark **FireWire®** has been noted in this application. It should be capitalized wherever it appears and be accompanied by the generic terminology. Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks.

3. The disclosure is objected to because of the following informalities:

there is no description for reference numeral **52** on Fig. 2;

there is no description for reference numeral **78** on Fig. 3;

there is no description for reference numeral **154** on Fig. 5;

there are no descriptions for reference numerals **192** and **194** on Fig. 7; and

on page 15 in line 12, the term "parellel" appears to be misspelled.

Appropriate correction is required.

4. Claims 2, 10 and 18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "high-resolution" in claims 2 and 10 is a relative term which renders the claim indefinite. The term "high-resolution" is not defined by the claims, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

Art Unit: 3662

Claim 18 contains the trademark **FireWire**<sup>®</sup>. Where a trademark is used in a claim as a limitation to identify or describe a particular material or product, the claim does not comply with the requirements of 35 U.S.C. 112, second paragraph. See *Ex parte Simpson*, 218 USPQ 1020 (Bd. App. 1982).

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1, 6-9 and 15-17 are rejected under 35 U.S.C. 102(b) as being anticipated by Kosalos et al. The Kosalos et al. reference discloses the utilization of an underwater unmanned vehicle **158** with a forward-looking sonar **160**; two side-looking sonars **162**; fusing the received data (see column 13, lines 23-25); beamforming (see column 14, lines 42-48); normalizing the received data (see column 11, line 64+); processing unit **18**; sampling means **36**; summing means **58**; weighting (see column 10, line 34); memory circuits **84**; a controller **82**; an interface **86**; and bistatic arrays (see Fig. 12).

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 2, 10, 14 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kosalos et al. in combination with Kits van Heyningen. The Kosalos et al. reference discloses the utilization of an underwater unmanned vehicle **158** with a forward-looking sonar **160**; two side-looking sonars **162**; fusing the received data (see column 13, lines 23-25); beamforming (see column 14, lines 42-48); normalizing the received data (see column 11, line 64+); processing unit **18**; sampling means **36**; summing means **58**; weighting (see column 10, line 34); memory circuits **84**; a controller **82**; an interface **86**; and bistatic arrays (see Fig. 12). The difference between the Kosalos et al. reference and the claims is that the claims recite the utilization of a downward-looking sonar. The Kits van Heyningen reference teaches that it was well known in the art to utilize a downward-looking sonar to enhance the operation of a forward-looking sonar. It would have been obvious to modify the Kosalos et al. reference to utilize a downward-looking sonar as motivated by the Kits van Heyningen reference to enable the Kosalos et al. system to determine clearance to the waters bottom.

9. Claims 3 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kosalos et al. in combination with Gilmour. The Kosalos et al. reference discloses the utilization of an underwater unmanned vehicle **158** with a forward-looking sonar **160**; two side-looking sonars **162**; fusing the received data (see column 13, lines 23-25); beamforming (see column 14, lines 42-48); normalizing the received data (see column 11, line 64+); processing unit **18**; sampling means **36**; summing means **58**; weighting (see column 10, line 34); memory circuits **84**; a controller **82**; an interface **86**; and

bistatic arrays (see Fig. 12). The difference between the Kosalos et al. reference and the claims is that the claims recite the utilization of a pivotable array. The Gilmour reference teaches that it was well known in the art to utilize a pivotable array. It would have been obvious to modify the Kosalos et al. reference to utilize a pivotable array as motivated by the Gilmour reference to enable the Kosalos et al. system to enhance the desired echo signals.

10. Claims 4 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kosalos et al. in combination with Morgera. The Kosalos et al. reference discloses the utilization of an underwater unmanned vehicle **158** with a forward-looking sonar **160**; two side-looking sonars **162**; fusing the received data (see column 13, lines 23-25); beamforming (see column 14, lines 42-48); normalizing the received data (see column 11, line 64+); processing unit **18**; sampling means **36**; summing means **58**; weighting (see column 10, line 34); memory circuits **84**; a controller **82**; an interface **86**; and bistatic arrays (see Fig. 12). The difference between the Kosalos et al. reference and the claims is that the claims recite the utilization of a detection mode and an identification mode. The Morgera reference teaches that it was well known in the art to utilize a detection mode and an identification mode. It would have been obvious to modify the Kosalos et al. reference to utilize a detection mode and an identification mode as motivated by the Morgera reference to enable the Kosalos et al. system to conserve processor power until a detection signal provided.

11. Claims 5 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kosalos et al. in combination with English. The Kosalos et al. reference discloses the

Art Unit: 3662

utilization of an underwater unmanned vehicle **158** with a forward-looking sonar **160**; two side-looking sonars **162**; fusing the received data (see column 13, lines 23-25); beamforming (see column 14, lines 42-48); normalizing the received data (see column 11, line 64+); processing unit **18**; sampling means **36**; summing means **58**; weighting (see column 10, line 34); memory circuits **84**; a controller **82**; an interface **86**; and bistatic arrays (see Fig. 12). The difference between the Kosalos et al. reference and the claims is that the claims recite the utilization of a communications array. The English reference teaches that it was well known in the art to utilize a communications array. It would have been obvious to modify the Kosalos et al. reference to utilize a communications array as motivated by the English reference to enable the Kosalos et al. system to provide control signals to an unmanned underwater vehicle.


12. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kosalos et al. in combination with Gilbert et al. The Kosalos et al. reference discloses the utilization of an underwater unmanned vehicle **158** with a forward-looking sonar **160**; two side-looking sonars **162**; fusing the received data (see column 13, lines 23-25); beamforming (see column 14, lines 42-48); normalizing the received data (see column 11, line 64+); processing unit **18**; sampling means **36**; summing means **58**; weighting (see column 10, line 34); memory circuits **84**; a controller **82**; an interface **86**; and bistatic arrays (see Fig. 12). The difference between the Kosalos et al. reference and the claim is that the claim recites the utilization of a **FireWire®** interface. The Gilbert et al. reference teaches that it was well known in the art to utilize a **FireWire®** interface in a sonar system. It would have been obvious to modify the Kosalos et al. reference to

Art Unit: 3662

utilize a **FireWire**<sup>®</sup> interface as motivated by the Gilbert et al. reference to enable the Kosalos et al. system to increase its bandwidth.

13. Claim 20 is rejected under 35 U.S.C. § 103 as being unpatentable over Kosalos et al. in combination with Kits van Heyningen as applied to claim 19 above, and further in combination with Gerard. The claim additionally recites the utilization of a programmable tapped delay line. The Gerard reference teaches that it was well known in the art to utilize a programmable tapped delay line. It would have been obvious to modify the previous combination of references to utilize a programmable tapped delay line as motivated by the Gerard reference to enable the system to enhance signal processing.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel Pihulic whose telephone number is 703-306-4168. The examiner can normally be reached on Monday through Thursday from 7 a.m. to 5 p.m. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Tarcza, can be reached on 703-306-4171. The fax phone numbers for the organization where this application or proceeding is assigned is 703-872-9326 for non-final responses and 703-872-9327 for after final responses. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1113.

  
**Daniel Pihulic**  
**Primary Examiner**  
**Art Unit 3662**